Claims

What is claimed is:

1. A resist composition comprising (a) an imaging polymer, and (b) a radiation sensitive acid generator component, said radiation sensitive acid generator component comprising:
   (i) a first radiation sensitive acid generator selected from the group consisting of dissolution-inhibiting acid generators, and
   (ii) a second radiation sensitive acid generator selected from the group consisting of unprotected acidic group-functionalized radiation sensitive acid generators and acid labile group-protected acidic group-functionalized radiation sensitive acid generators.

2. The resist composition of claim 1 wherein said imaging polymer comprises a ketal-functionalized acid sensitive polymer.

3. The resist composition of claim 1 wherein said second radiation-sensitive acid generator is an acidic group-functionalized acid generator comprising an acidic moiety selected from the group consisting of phenolic moieties, carboxylic moieties and fluoroalcohol moieties.

4. The resist composition of claim 1 wherein said second radiation-sensitive acid generator is an acid labile group protected acidic group-functionalized acid generator which is reactive with acid to form a pendant acidic moiety selected from the group consisting of phenolic moieties, carboxylic moieties and fluoroalcohol moieties.

5. The composition of claim 1 wherein said resist composition contains at least about 4 wt.% of said radiation sensitive acid generator component based on the weight of said imaging polymer.

6. The composition of claim 1 wherein said first and second acid generators are present in a mole ratio of about 5:1 to about 1:5.

7. A method of forming a patterned material structure on a substrate using the resist composition of any of claims 1 to 6, said material being selected from the group consisting of organic dielectrics, semiconductors, ceramics and metals, said method comprising:

(A) providing a substrate with a layer of said material,

(B) applying a resist composition according to any of claims 1 to 8 to said substrate to form a resist layer on said substrate;

(C) patternwise exposing said substrate to radiation whereby acid is generated by acid generator of the resist in exposed regions of said resist layer by said radiation,

(D) contacting said substrate with an aqueous alkaline developer solution, whereby said exposed regions of said resist layer are selectively dissolved by said developer solution to reveal a patterned resist structure, and

(E) transferring resist structure pattern to said material layer, by etching into said material layer through spaces in said resist structure pattern.

8. The method of claim 7 wherein at least one intermediate layer is provided between said material layer and said resist layer, and step (E) comprises etching through said intermediate layer.

9. The method of claim 7 wherein said radiation is selected from the group consisting of electron projection radiation, EUV radiation, and soft x-ray radiation.

10. The method of claim 7 wherein said substrate is baked between steps (C) and (D).